REMARKS

Claims 1-7, 9-12 and 15-20 are pending, while claims 8, 13, and 14 are withdrawn from consideration. Reexamination and reconsideration of the application, as amended, are respectfully requested.

The May 31, 2001 Office Action objected to the drawings. The Examiner found that Figures 1-3 should be designated by a legend (such as --Prior art--). Further, in Figure 2 the switch active layer labeled 29 should be labeled 21. Finally, that the specification, on page 7, line 8, incorrectly refers to the substrate as element 121 (instead of 110).

In response, Applicant's propose adding the legend --Related Art-- to Figures 1-3, and changing the label 29 of Figure 2 to 21. Furthermore, the specification is amended to change "121" to --110--. Therefore, if the Examiner agrees to the drawing changes described above and illustrated in the accompanying Proposed Drawings Changes, the objections to the drawings will be overcome.

The May 31, 2001 Office Action rejected claims 13 and 14 under 35 U.S.C. §112 for not setting forth a standard for which one of ordinary skill in the art could make and use the claimed invention. In particular, the use of "a hole barrier layer" was found improper.

In response, claims 13 and 14 are withdrawn from consideration.

The May 31, 2001 Office Action also rejected claims 1-14 under 35 U.S.C. §103(a) as being unpatentable over the applicant's admitted prior art in view of den Boer et al. (U.S. Patent 5,656,824). The Patent Office indicated that applicant's admitted prior art discloses the claimed invention, except for a switching TFT with dual-layered source and drain electrodes. Further, that den Boer teaches (in figure 2) a source electrode having a dual-layered structure of a transparent

conducting material and a metal material. Thus, the patent office held that it would have been obvious to one of ordinary skill in the art at the time the of the present invention to use a dual-layered structured source electrode of den Boer in the switching TFT of the applicant's admitted prior art in order to permit the TFT to selectively energize a corresponding pixel in a liquid crystal display as stated by den Boer. Further, that it would have obvious to one of ordinary skill in the art at the time of the present invention to use a drain electrode that is exactly the same as the dual layered source electrode of den Boer in the switching TFT of the applicant' admitted prior art and den Boer in order to simplify processing steps as is well known the art.

In response, claim 1 is amended to clarify the structure of dual-layered electrodes. In particular, dual layered source and drain electrodes that are comprised of first source and drain electrodes made from a transparent material that is in contact with the active layer and second source and drain electrodes comprised of a metal material on the first source and drain electrodes. In contrast, den Boer teaches a lower (opaque) source metal layer 40 and an upper transparent source metal layer 42, reference column 5, lines 49-51.

Additionally, new claims 15-20 are added. Those new claims include a limitation related to a dual layered electrode that is comprised of a transparent material and of a metal layer on the transparent material.

In view of the amendment to claim 1, pending claims 5-8, 11, and 12 are withdrawn from consideration. Furthermore, claims 9 and 10 are amended to depend from claim 1.

Therefore, claims 1-4, 9-10, and 15-20 are believed to be allowable. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 624-1285 to discuss the steps necessary for placing the

application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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Date: August 31, 2001

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Attachments: Exhibit I
Exhibit II

ATTACHMENT

EXHIBIT I – MARKED UP VERSION OF AMENDED SPECIFICATION

On page 7, Paragraph beginning at Line 6, please amend as follows:

As shown in Fig. 4b, a first insulating layer 117, which is preferably one of the group consisting of aluminum oxide (Al_2O_x), silicon oxide (SiO_x) and tantalum oxide (TaO_x), is deposited on the substrate [121] 110 while covering the switch gate 115, the first capacitor electrode 113 and the sensor gate 111. An amorphous silicon layer and an n+ amorphous layer are deposited on the first insulating layer 117 in succession to form switch and sensor active layers 121 and 119, and switch and sensor ohmic contact layers 125 and 123 over switch and sensor gates 115 and 111, respectively. Switch and sensor active layers 121 and 119 are preferably smaller than the switch and sensor gates 115 and 111, respectively, in order to protect the active layers 121 and 119 from the light of a light source (not shown) under the substrate 110. A transparent conducting material is deposited thereon to form switch source and drain electrodes 129a and 129b, a second capacitor electrode 131 and sensor source and drain electrodes 127a and 127b. In the thin film transistor optical detecting sensor, since it is desirable that light from the light source positioned under the substrate 110 should be transmitted to an object over the substrate through the substrate 110, especially through the window area "H" as much as possible, a transparent conducting material such as indium tin oxide is used.

ATTACHMENT

EXHIBIT II - MARKED-UP VERSION SHOWING AMENDED CLAIM CHANGES

1. (Amended) An optical detecting sensor, comprising:

a sensor thin film transistor (TFT) generating optical current by incident light reflected from an object;

a storage capacitor storing charges of the optical current generated in the sensor thin film transistor; [and]

a switching TFT controlling a release of the stored charges of the storage capacitor to an external circuit for display of an image of the object, the switching TFT having a gate electrode, an insulating layer on the gate electrode, an active layer on the insulating layer, and dual layered source and drain electrodes that are comprised of first source and drain electrodes made from a transparent conductive material that is in contact with the active layer and second source and drain electrodes comprised of a metal material on the first source and drain electrodes [of transparent conducting material and metal material, an active layer and a gate electrode.];and

an ohmic contact layer disposed between said active layer and said source electrode.

9. (Amended) An optical detecting sensor according to claim [8]1, wherein the metal material is a substantially non-transparent metal material.

10. (Amended) An optical detecting sensor according to claim [8]1, wherein the transparent conducting material [layer] and the metal material [layer] each contact the ohmic contact layer.